

REMARKS

In response to the Official Office Action dated June 21, 2004, claims 47-58 have been cancelled and new claims 59-76 have been added. It is believed that the claims define over the prior art made of record by the Examiner and reexamination of this application is therefore respectfully requested.

The patent to Wilson et al. (U.S. Patent No. 5,377,229) discloses a receiver that receives and demodulates both a constant envelope signal and a non-constant envelope signal. The receiver can be paired with a transmitter that transmits either a constant envelope signal or a non-constant envelope signal. More particularly, Wilson discloses a receiver that can receive 4-level FM signals and $\pi/4$ differential QPSK signals used in D-AMPS systems. The 4-level FM signals are constant envelope signals and the differential QPSK signals are linearly modulated signals with a non-constant envelope.

Wilson discloses using an FM discriminator-type detector configured to receive 4-level FM signals to also receive $\pi/4$ differential QPSK signals. An FM discriminator is made by differencing successive phase samples. A discriminator suitable for demodulating 4-level FM signals giving 2-bits per symbol works marginally with $\pi/4$ differential QPSK signals because in $\pi/4$ differential QPSK, the phase rotates over a one symbol interval by either plus or minus $\pi/4$ or plus or minus $3\pi/4$. A phase shift in a given time equates to a frequency shift so the phase shift looks like one of the four frequency shifts used in 4-level FM. Thus, the FM discriminator treats the phase shifts in $\pi/4$ differential QPSK modulated signals as a frequency shift.

It is important to note that the receiver is adapted to receive a constant envelope signal, i.e., a 4-level FM signal. From the perspective of the receiver, the linearly-modulated signal is an approximation of the constant envelope signal. To Applicant's knowledge, the receiver described in Wilson was never put into commercial use because it yielded poor performance in demodulating differential QPSK signals used in D-AMPS.

The present invention differs from Wilson in two significant respects. First, the invention described in independent claims 59 and 68 recite a linear modulation receiver configured to receive linearly-modulated signals and that is capable of receiving constant envelope modulated signals which are an approximation of the linearly-modulated signals for which the receiver is designed. These limitations are exactly opposite what is done in Wilson. In Wilson, the receiver is a constant envelope receiver designed primarily to receive constant envelope modulated signals, but that is operative to receive linearly-modulated signals that approximate the constant envelope modulated signals.

A second distinction between the claimed invention and the prior art cited by the Examiner is that the claimed invention receives the linearly-modulated signals and constant envelope modulated signals over downlink channels with the same channel bandwidth. In Wilson, the constant envelope modulated signals and the linearly-modulated signals are received over channels having different channel bandwidths. As described at page 9 of the specification, receiving signals over channels with different bandwidths is undesirable because the filter components used to establish receiver bandwidths are large and costly. The present invention avoids duplication of receiver filters for downlink channels with different channel bandwidths.

Based on the foregoing, Applicant believes that the claims currently presented define over the prior art made of record by the Examiner.

Respectfully submitted,

COATS & BENNETT, P.L.L.C.



David E. Bennett
Attorney for Applicants
Registration No.: 32,194

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P.O. Box 5
Raleigh, NC 27602
Telephone: (919) 854-1844